

Simple PIV Test Circuit

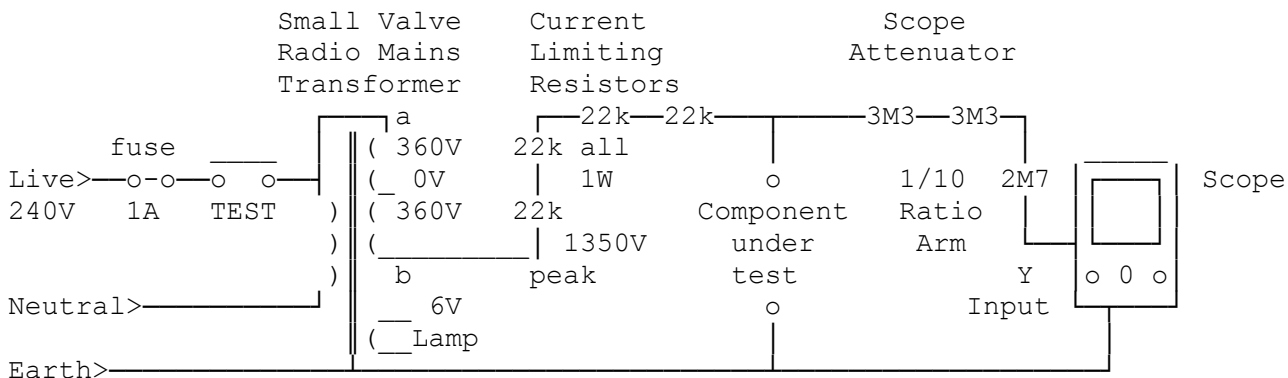
By G8MNY

(Updated Nov 19)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I use this rather dangerous circuit to test high voltage diode Peak Inverse Voltage & high voltage transistors breakdown voltage.

As shown this circuit may trip out house ELCB. If that is a problem take point "a" to earth instead of live, for lower voltage isolated tester!



The use of a test button means that the high voltage is not applied until you are ready & WELL CLEAR of the circuit!

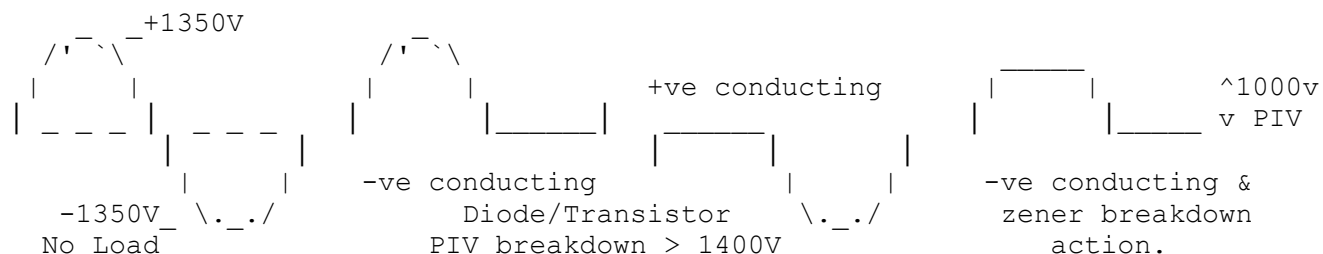
The phase of the secondary connection (a & b) to the mains is important if >700V RMS is wanted for testing. (also assuming you don't have a very sensitive RCD mains trip.)

The 4x 22k 1W are not "rated" so tests are limited to a few seconds. The 4 Rs limit the maximum test current to 15mA, which is not enough to damage power devices. (but could just harm U!)

The DC scope needs a high voltage probe, that can just be several high value Rs in series with the scopes standard 1M input to give approx 10:1 reduction.

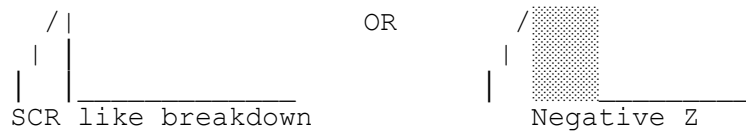
N.B. Commercial scope probes (1:10 or 1:100) are not normally rated at such high voltages!

The scope then shows the polarity & safe breakdown voltage....



For exact PIV measurement you can easily calibrate your scope gain to the ratio arm by measuring the known mains voltage & applying x 1.4 peak factor (or times 2.8 pk-pk).

Sometimes you see proper avalanche where at the breakdown voltage the device conducts heavily (SCR like), or oscillates at HF (negative Z). Components like these used say on the mains or mains PSU cap will be destroyed in a few uS of the triggering PIV peak is ever reached!



The oscillating negative Z of a device in a power circuit can easily cause horrendous amounts QRM, change the device & all is quiet!

Why Don't U send an interesting bul?

73 de John G8MNY @ GB7CIP